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L1: Entry 3 of 5

File: USPT

Mar 28, 2000

US-PAT-NO: 6043094

DOCUMENT-IDENTIFIER: US 6043094 A

TITLE: Therapeutic liposome composition and method

DATE-ISSUED: March 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Francis J.	San Francisco	CA		
Zalipsky; Samuel	Redwood City	CA		
Huang; Shi Kun	Castro Valley	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sequus Pharmaceuticals, Inc.	Menlo Park	CA			02

APPL-NO: 08/ 949039 [PALM]

DATE FILED: October 10, 1997

PARENT-CASE:

THERAPEUTIC LIPOSOME COMPOSITION AND METHOD This application claims the benefit of U.S. Provisional Application No. 60/027,923, filed Oct. 11, 1996, incorporated herein by reference in its entirety.

INT-CL: [07] C12 N 15/64, A61 K 9/127

US-CL-ISSUED: 435/458; 424/450, 435/375, 530/402, 530/403

US-CL-CURRENT: 435/458; 424/450, 435/375, 530/402, 530/403

FIELD-OF-SEARCH: 424/450, 424/9.321, 424/417, 424/420, 424/94.3, 424/812, 424/9.1, 424/9.2, 264/4.1, 436/829, 514/2, 514/44, 435/455, 435/458, 435/476, 435/366, 435/375, 530/402, 530/403, 530/387.1, 530/391.9

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

PAT-NO

ISSUE-DATE

PATENTEE-NAME

US-CL



4935465

June 1990

Garman

525/54.1



5013556

May 1991

Woodle et al.

424/450

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 317 957 A2	May 1989	EP	
0 526 700 A2	February 1993	EP	
WO 94/21281	September 1994	WO	

OTHER PUBLICATIONS

International Search Report for PCT Application No. PCT/US97/18813 (Mar. 11, 1998).
Allen, T.M. et al., "A New Strategy for Attachment of Antibodies to Sterically Stabilized Liposomes Resulting in Efficient Targeting to Cancer Cells," *Biochimica et Biophysica Acta*. 1237: 99-108 (1995).
Blume, G. et al., "Specific Targeting with Poly(Ethylene Glycol)-Modified Liposomes: Coupling of Homing Devices to the Ends of the Polymeric Chains Combines Effective Target Binding with Long Circulation Times," *Biochimica et Biophysica Acta*. 1149: 180-184 (1993).
DeFrees, S.A. et al., "Sialyl Lewis x Liposomes as a Multivalent Ligand and Inhibitor of E-Selectin Mediated Cellular Adhesion," *J. Am. Chem. Soc.* 118: 6101-6104 (1996).
Kirpotin, D. et al., "Liposomes with Detachable Polymer Coating: Destabilization and Fusion of Dioleoylphosphatidylethanolamine Vesicles Triggered by Cleavage of Surface-Grafted Poly(Ethylene Glycol)," *FEBS Letters*. 388: 115-118 (1996).
Klibanov, A.L. and Huang, L., "Long-Circulating Liposomes: Development and Perspectives," *Journal of Liposome Research*. 2:(3) 321-334 (1992).
Zalipsky, S. et al., "Long Circulating, Cationic Liposomes Containing Amino-PEG-Phosphatidylethanolamine," *FEBS Letters*. 353: 71-74 (1994).
Zalipsky, S., "Polyethylene Glycol-Lipid Conjugates" in *Stealth Liposomes*. eds. Lasic, D. and Martin, F., CRC Press, Inc., Fla.. 1995, pp. 93-102.
Zalipsky, S., "Synthesis of an End-Group Functionalized Polyethylene Glycol-Lipid Conjugate for Preparation of Polymer-Grafted Liposomes," *Bioconjugate Chem.* 4:(4) 296-299 (1993).
Haynes. Scientific and Social Issues of Human Immunodeficiency Virus Vaccine Development. *Science*. 260: 1279-1286, 1993.
Bone. The Pathogenesis of Sepsis. *Annals of Internal Medicine*. 115 (6): 457-469, Sep. 15, 1991.

ART-UNIT: 166

PRIMARY-EXAMINER: Brusca; John S.

ASSISTANT-EXAMINER: Shuman; Jon D.

ABSTRACT:

A method of liposome-based therapy for a mammalian subject is disclosed. The method uses liposomes with outer surfaces that contain an affinity moiety effective to bind specifically to a biological surface at which the therapy is aimed, and a hydrophilic polymer coating effective to shield the affinity moiety from interaction with the target surface. The hydrophilic polymer coating is made up of polymer chains covalently linked to surface lipid components in the liposomes through releasable linkages. After a desired liposome biodistribution is achieved, a releasing agent is administered to cause cleaving of a substantial portion of the releasable linkages in the liposomes, to expose the affinity agent to the target surface.

17 Claims, 9 Drawing figures

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 5 of 5 returned.**☐ 1. Document ID: US 6248720 B1

L1: Entry 1 of 5

File: USPT

Jun 19, 2001

US-PAT-NO: 6248720

DOCUMENT-IDENTIFIER: US 6248720 B1

TITLE: Method for gene therapy using nucleic acid loaded polymeric microparticles

DATE-ISSUED: June 19, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mathiowitz; Edith	Brookline	MA		
Jong; Yong S.	Warwick	RI		
Carino; Gerardo	Providence	RI		
Jacob; Jules S.	Taunton	MA		

US-CL-CURRENT: 514/44; 424/489, 424/490, 424/497, 435/320.1, 435/455

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC
Draw Desc	Image										

☐ 2. Document ID: US 6120799 A

L1: Entry 2 of 5

File: USPT

Sep 19, 2000

US-PAT-NO: 6120799

DOCUMENT-IDENTIFIER: US 6120799 A

TITLE: Cationic lipid compositions targeting angiogenic endothelial cells

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McDonald; Donald M.	San Francisco	CA		
McLean; John	Redwood City	CA		
Thurston; O. Gavin	San Francisco	CA		
Baluk; Peter	San Francisco	CA		

US-CL-CURRENT: 424/450

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC
Draw Desc	Image										

☐ 3. Document ID: US 6043094 A

L1: Entry 3 of 5

File: USPT

Mar 28, 2000

US-PAT-NO: 6043094

DOCUMENT-IDENTIFIER: US 6043094 A

TITLE: Therapeutic liposome composition and method

DATE-ISSUED: March 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Francis J.	San Francisco	CA		
Zalipsky; Samuel	Redwood City	CA		
Huang; Shi Kun	Castro Valley	CA		

US-CL-CURRENT: 435/458; 424/450, 435/375, 530/402, 530/403

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC
Draw Desc	Image										

☐ 4. Document ID: US 5837283 A

L1: Entry 4 of 5

File: USPT

Nov 17, 1998

US-PAT-NO: 5837283

DOCUMENT-IDENTIFIER: US 5837283 A

TITLE: Cationic lipid compositions targeting angiogenic endothelial cells

DATE-ISSUED: November 17, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McDonald; Donald M.	San Francisco	CA		
McLean; John	Redwood City	CA		
Thurston; O. Gavin	San Francisco	CA		
Baluk; Peter	San Francisco	CA		

US-CL-CURRENT: 424/450

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 5. Document ID: WO 9840052 A1 US 5837283 A AU 9864613 A NO 9904413 A BR 9808018 A EP 1014945 A1 US 6120799 A AU 727946 B KR 2000076182 A MX 9908343 A1 JP 2001509816 W US 20020155102 A1

L1: Entry 5 of 5

File: DWPI

Sep 17, 1998

DERWENT-ACC-NO: 1998-520784

DERWENT-WEEK: 200278

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TITLE: Inhibitor/lipid complexes for, e.g. treatment of inflammation - comprise cationic lipid(s) and inhibitor of angiogenesis and have, in blood, high affinity for angiogenic endothelial cells

INVENTOR: BALUK, P; MCDONALD, D M ; MCLEAN, J ; THURSTON, O G ; MACDONALD, D M ; MCCLEAN, J

PRIORITY-DATA: 1997US-0820337 (March 12, 1997), 1998US-0127177 (July 31, 1998), 1999US-0429071 (October 29, 1999), 2002US-0160714 (May 29, 2002)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9840052 A1	September 17, 1998	E	068	A61K009/127
US 5837283 A	November 17, 1998		000	A61K009/127
AU 9864613 A	September 29, 1998		000	A61K009/127
NO 9904413 A	November 10, 1999		000	A61K000/00
BR 9808018 A	March 8, 2000		000	A61K009/127
EP 1014945 A1	July 5, 2000	E	000	A61K009/127
US 6120799 A	September 19, 2000		000	A61K009/127
AU 727946 B	January 4, 2001		000	A61K009/127
KR 2000076182 A	December 26, 2000		000	A61K009/127
MX 9908343 A1	August 1, 2000		000	A61K009/127
JP 2001509816 W	July 24, 2001		076	A61K045/06
US 20020155102 A1	October 24, 2002		000	A61K038/48

INT-CL (IPC): A61 K 0/00; A61 K 9/00; A61 K 9/127; A61 K 31/7088; A61 K 38/48; A61 K 45/06; A61 K 49/00; A61 P 35/00; G01 N 33/50

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMCM
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(cationic adj1 liposome\$) same label

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L4: Entry 30 of 42

File: USPT

Apr 6, 1999

DOCUMENT-IDENTIFIER: US 5891689 A

TITLE: Heme-bearing microparticles for targeted delivery of drugs

Detailed Description Text (35):

A variety of drugs and compounds can be delivered to specific cells and organs using heme-bearing microparticles, including nucleic acid-based compounds, such as ribozymes and antisense oligonucleotides, proteins, carbohydrates, synthetic organic and inorganic molecules, monitoring agents, and combinations thereof, referred to herein as "therapeutic compounds" unless otherwise specified. In the preferred embodiment, the therapeutic compounds are nucleic acids, especially ribozymes, antisense oligonucleotides, aptamers, triplex molecules and antisense oligonucleotides. Examples of compounds falling within this group include DNA and RNA for transfection, and compounds to label intracellular molecules, as described, for example, by Felgner et al., Proc. Natl. Acad. Sci. USA, 84, 7413-7417; Lee et al., Biochim. Biophys. Acta, 1103, 185-197 (1992). Any therapeutic or function-enhancer could be incorporated, for instance, any liver enzyme for which there is a deficiency could be delivered using the heme system.

Detailed Description Text (40):

Alternatively, cationic liposomes can be prepared by using mixtures including one or more lipids containing a cationic side group in a sufficient quantity such that the liposomes formed from the mixture possess a net positive charge which will ionically bind negatively charged compounds. Cationic liposomes have a great capacity for association with nucleic acids. Studies demonstrate that 4 .mu.g lipid (dioleoyl trimethylammonium propane:dioleoyl phosphatidylethanolamine 1:1 molar mixture) binds at least 1 .mu.g DNA, and that this was 100% of the added dose, implying that this lipid was not saturated. This is representative of the binding stoichiometry of DNA to most positively charged lipids.

Detailed Description Text (41):

Examples of positively charged lipids that may be used to produce cationic liposomes include the aminolipid dioleoyl PE, which possesses a positively charged primary amino head group; phosphatidylcholines, which possess positively charged head groups which are not primary amines; and the recently designed N[1-(2,3-dioleoyloxy)propyl]-N,N,N-triethylammonium ("DOTMA," described by Felgner, P. L. et al., Proc. Natl. Acad. Sci. USA, 84, 7413-7417 (1987); Felgner, P. L. et al., Nature, 337, 387-388 (1989); Felgner, P. L., Advanced Drug Delivery Reviews, 5, 163-187 (1990)).

Detailed Description Text (42):

Cationic liposomes are particularly useful for delivering negatively charged compounds such as nucleic acid-based compounds, which bind ionically to the positively charged outer surface of these liposomes. Various cationic liposomes have previously been shown to be very effective at delivering nucleic acids or nucleic acid-protein complexes to cells both in vitro and in vivo, as reported by Felgner, P. L. et al., Proc. Natl. Acad. Sci. USA, 84, 7413-7417 (1987); Felgner, P. L., Advanced Drug Delivery Reviews, 5, 163-187 (1990); Clarenc, J. P. et al., Anti-Cancer Drug Design, 8, 81-94. Following association of the DNA with the preformed cationic liposome, it has been hypothesized that the membranes realign and form complexes entrapping the added nucleic acid possibly by fusion of adjacent liposomes.

Detailed Description Text (43):

The cationic liposomes can be conjugated or intercalated with heme, as described above, before, or preferably, after incorporation of compound. For example, heme-bearing cationic liposomes can be mixed with a negatively charged drug or other compound, which will then complex with the surface of the liposomes ionically via positive charge-negative charge interactions.

Current US Cross Reference Classification (1):
424/450

CLAIMS:

7. The method of claim 6 wherein the liposome is a cationic liposome.
16. The method of claim 15 wherein the liposome is a cationic liposome.
24. The liposome of claim 23 wherein the liposome is a cationic liposome.

WEST**End of Result Set**☐

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L4: Entry 42 of 42

File: USPT

Aug 4, 1987

DOCUMENT-IDENTIFIER: US 4684625 A

TITLE: Method for enhancing the anti-infective activity of muramyl dipeptide derivatives

Brief Summary Text (76):

The liposomes may be anionic, basic or neutral depending upon the choice of hydrophilic group. For instance, when a phosphate or a sulfate group is used the resulting liposome will be anionic. When amino-containing surfactants are used, the liposomes will have a positive charge, or be cationic liposomes, and when polyethyleneoxy or glycol groups are present in the surfactant, neutral liposomes will be obtained. Compounds suitable for forming liposomes may be found in references including McCutcheon's Detergents and Emulsifiers and McCutcheon's Functional Materials, Allured Pub. Company, Ridgewood, N.J., U.S.A.

Detailed Description Text (8):

MLVs were prepared as described above, hydrating the dried lipid film with PBS. These pre-formed liposomes were then mixed with unencapsulated MDP compound spiked with tritiated N-acetyl desmethyl muramyl-L-alanyl-D-isoglutamine (³H-desMDP). The liposome/MDP derivative mixture was washed and pelleted, and the final liposome pellet resuspended in PBS. The radioactivity in the liposome fraction was determined, as well as the radioactivity in the aqueous supernatant from the washing and pelleting steps. The results are presented in Table III. These results show that essentially 100% of the ³H label remained in the supernatant and was not incorporated into the liposomes. Thus, MDP compounds are not incorporated into or attached to liposomes in the practice of the invention.

Current US Cross Reference Classification (1):424/450

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L4: Entry 41 of 42

File: USPT

Nov 24, 1987

DOCUMENT-IDENTIFIER: US 4708861 A

TITLE: Liposome-gel compositions

Brief Summary Text (51):

Most amphipathic lipids may be constituents of SPLVs. Suitable hydrophilic groups include but are not limited to: phosphato, carboxylic, sulphato and amino groups. Suitable hydrophobic groups include but are not limited to: saturated and unsaturated aliphatic hydro-carbon groups and aliphatic hydrocarbon groups substituted by at least one aromatic and/or cycloaliphatic group. The preferred amphipathic compounds are phospholipids and closely related chemical structures. Examples of these include but are not limited to: lecithin, phosphatidyl-ethanolamine, lysolecithin, lysophosphatidylethanolamine, phosphatidylserine, phosphatidylinositol, sphingomyelin, cardiolipin, phosphatidic acid and the cerebrosides. Specific examples of suitable lipids useful in the production of SPLVs are phospholipids which include the natural lecithins (e.g., egg lecithin or soybean lecithin) and synthetic lecithins, such as saturated synthetic lecithins (e.g., dimyristoylphosphatidylcholine, or dipalmitoylphosphatidylcholine or distearoyl-phosphatidylcholine) and unsaturated synthetic lecithins (e.g., dioleoylphosphatidylcholine or dilinoleoyl-phosphatidylcholine). The SPLV bilayers can contain a steroid component such as cholesterol, coprostanol, cholestanol, cholestane and the like. When using compounds with acidic hydrophilic groups (phosphato, sulfato, etc.) the obtained SPLVs will be anionic; with basic groups such as amino, cationic liposomes will be obtained; and with polyethylenoxy or glycol groups neutral liposomes will be obtained. The size of the SPLVs varies widely. The range extends from about 100 nm to about 10,000 nm (10 microns) and usually about 100 nm to about 1,500 nm. The SPLVs are characterized by a few to over 100 lipid bilayers enclosing aqueous compartments.

Brief Summary Text (59):

Specific examples of suitable lipids useful in the production of MPVs are phospholipids which include but are not limited to the natural lecithins or phosphatidylcholines (e.g., egg lecithin or soybean lecithin) and synthetic lecithins, such as saturated synthetic lecithins (e.g., dimyristoylphosphatidylcholine or dipalmitoylphosphatidylcholine or distearoylphosphatidylcholine) and unsaturated synthetic lecithins (e.g., dioleoylphosphatidylcholine or dilinoleoylphosphatidylcholine). Other phospholipids include but are not limited to phosphatidylethanolamine, lysolecithin, lysophosphatidylethanolamine, phosphatidylserine, phosphatidylinositol, sphingomyelin, cardiolipin, phosphatidic acid, ceramides and the cerebrosides. The MPV bilayers can contain a steroid component such as cholesterol, coprostanol, cholestanol, cholestane and the like. When using compounds with acidic hydrophilic groups (phosphato, sulfato, etc.) the obtained MPVs will be anionic; with basic groups such as amino, cationic liposomes will be obtained.

Detailed Description Text (43):

SPLVs containing insulin (insulin/SPLVs) were prepared as described in Section 4.1: 100 mg dipalmitoyl phosphatidylcholine was dissolved in 5 ml diethyl ether. To this was added 0.3 ml of aqueous buffer (either PBS or 0.01M Tris) at pH 7.4. containing 15 mg bovine insulin (25 unit/mg) (Sigma Chemical CO., St. Louis, MO). In order to solubilized the insulin in the aqueous buffer, it was necessary first to partition the hormone powder into a solution (50 mg/ml) of sonicated small unilamellar vesicles composed of EPC. Following solubilization, the aqueous droplet was emulsified into

the ether phase by sonicating under a stream of nitrogen until the ether was completely evaporated. The lipid/insulin paste was rehydrated to form insulin/SPLVs. The insulin/SPLVs were washed three times in buffer containing 10 mM CaCl₂. The CaCl₂ facilitated pelleting of the insulin/SPLVs. Entrapment of insulin as determined by ¹⁴C-insulin label was 20-30%.

Current US Cross Reference Classification (4):

424/450

WEST

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L4: Entry 38 of 42

File: USPT

Sep 3, 1996

DOCUMENT-IDENTIFIER: US 5552155 A

TITLE: Fusogenic liposomes and methods for making and using same

Detailed Description Text (59):

Membrane fusion was monitored by a loss in RET between the fluorescently labeled lipids NBD-PE and Rh-PE. When liposomes containing both of these labels fuse with unlabeled liposomes, the resulting dilution of the fluorescent probes gives increased fluorescence for NBD-PE. Appreciable exchange of these labeled lipids between liposomes does not appear to occur even in aggregated systems, and fluorescence increases only upon mixing of membrane lipids.

Detailed Description Text (60):

The use of the fluorescent probe dilution assay to demonstrate fusion in LUVs containing 10 mole % AL-1 is depicted in FIGS. 3 and 4. Unlabeled and labeled liposomes (3:1) comprising EPC/Chol (55:45) with no AL-1 showed no increase in fluorescence upon dissipation of the pH gradient. A small decrease in fluorescence was observed due to the addition of the ammonium solution. Similar liposomes containing 10 and 20 mole % AL-1 gave a rapid increase in fluorescence which leveled out quickly at a value of $\Delta F / \Delta F_{\text{sub.max}}$ near 3%. This represents only a limited amount of the total possible lipid mixing which for 3:1 mixtures of unlabeled and labeled liposomes should give a $\Delta F / \Delta F_{\text{sub.max}}$ of 80%, as determined by preparing liposomes with the fluorescent labels at one quarter of the normal concentration (0.18 mole %). The low fluorescence increase observed indicates that, while AL-1 can induce pH gradient-controlled fusion in EPC/Chol liposomes, its ability to do so is limited. For AL-1 concentrations greater than about 20 mole %, in EPC/Chol liposomes, rapid and complete liposome aggregation was observed following extrusion.

Current US Original Classification (1):

424/450

Other Reference Publication (13):

Konopka, et al., "Enhancement of human immunodeficiency virus type 1 infection by cationic liposomes: the role of CD4, serum and liposome-cell interactions", J. Gen Virol, 72: 2685-2696, 1991.

Other Reference Publication (15):

Malone, et al., "Cationic Liposome-Mediated RNA Transfection", Proc. Natl. Acad. Sci, 86: 6077-6081, 1989.

WEST

Generate Collection

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L4: Entry 35 of 42

File: USPT

Jul 14, 1998

DOCUMENT-IDENTIFIER: US 5780052 A

TITLE: Compositions and methods useful for inhibiting cell death and for delivering an agent into a cell

Detailed Description Text (22):

Antibodies, and in particular monoclonal antibodies, are the focus of intense interest in the field of cancer research. Antibodies have been developed to cell-surface antigens for a number of malignancies, but are useful only in restricted categories of tumors. Techniques are known for conjugating such antibodies to pharmacologically active agents or to labels to permit diagnosis, localization, and therapy directed toward such tumors.

Detailed Description Text (40):

Liposome/drug formulations are characterized by measurements of particle size, lipid concentration, and pH by standard methods as described above. Drug incorporation into the composition may be determined by inclusion of radiolabeled tracer in the composition. The amount of liposome-entrapped drug is then determined by gel permeation chromatography using BioRad A-15M resin. The liposomal drug fraction is calculated from the amount of radiolabel present in the void volume of the column, and the percentage of liposomal drug from the ratio of label eluting in the void volume to the remaining label eluting from the column.

Detailed Description Text (52):Labeling and Labels Useful in the InventionDetailed Description Text (53):

The various labels listed below need not be limited to labeling of antibodies. Instead of antibodies, other carriers (synthetic or natural) may be used as recipients of the labels.

Detailed Description Text (59):

Radiopaque materials also may be used to label the antibodies. Suitable radiopaque materials are well known and include iodine compounds, barium compounds, gallium compounds, thallium compounds, and the like. Specific examples of radiopaque materials include barium, diatrizoate, ethiodized oil, gallium citrate, iocarmic acid, iocetamic acid, iodamide, iodipamide, iodoxamic acid, iogulamide, iohexol, iopamidol, iopanoic acid, iotasul, iotetric acid, iothalamic acid, iotroxic acid, ioxaglic acid, ioxotrizoic acid, ipodate, meglumine, metrizamide, metrizoate, propyliodone, and thallous chloride.

Detailed Description Text (62):Conjugation of Labels and Therapeutic Compounds to Antibodies or Other CarriersDetailed Description Text (91):

One diagnostic procedure of the present invention involves diagnosing sites of necrosis in an organ or tissue. This procedure utilizes immunoliposomes specific for intracellular antigens and containing a diagnostic agent, e.g., a detectable molecule such as an imaging agent. One example of such an agent is a gamma-emitting radionuclide of the type previously discussed. The radionuclide may be attached to a convenient carrier molecule, such as a chelating polymer. The radionuclide-containing immunoliposome is injected (preferably intravenously) into a patient suspected of containing an organ or tissue that is undergoing cell death; for example, a patient

who has received chemotherapy, radiation therapy, or both. This procedure is preferably carried out at least one or two days after the initiation of the therapy, in order to permit resultant necrosis of the neoplastic tissue to advance to a sufficient point that reasonable numbers of necrotic cells are present. Between 30 minutes and 3 days following administration of the labeled antibody, an appropriate scintigraphic imaging technique is employed to image the label that is localized in necrotic tissue. Suitable imaging techniques include gamma cameras and SPECT (single photon emission computed tomography) techniques.

Detailed Description Text (119):

A monoclonal antimyosin antibody was generated by hybridization of immune murine spleen cells with SP2/OA murine myeloma cells, purified by methods previously described (Khaw et al., Hybridoma 3:11-23, 1984, hereby incorporated by reference), and numbered 2G42D7 (as referred to herein). The bicyclic anhydride of diethylenetriamine pentaacetic acid (DTPA) is prepared by the method of Hnatowich et al. (Hnatowich et al., Science 220:613-615, 1983, hereby incorporated by reference) for coupling with antimyosin-Fab. The molar ratio of DTPA to Fab was 1:1. Two approaches may be used to label antimyosin Fab, .sup.111 In coupling to the DTPA and .sup.123 I coupling directly to the protein using chloramine-T.

Detailed Description Text (121):

Approximately 37 MBq (1 mCi) of .sup.111 InCl is used to label 100 .mu.g of DTPA-R11D10-Fab. To a 1-mCi aliquot (50 .mu.l) of .sup.111 InCl, an equal volume of 1M sodium citrate (pH 5.5) is added, followed by an aliquot of antimyosin-Fab. The reaction mixture is allowed to incubate at room temperature for 30 min. Antibody-bound .sup.111 In is separated from free .sup.111 In by SEPHADEX (Sigma Chemical, St. Louis, Mo.) G-25 column (10 ml) chromatography. The peak tubes in the void volume containing the radiolabeled antibody are pooled and used within 1 hour of radiolabeling. An average of 80% of the initial antibody concentration is recovered in the peak tubes containing the radiolabeled antibody.

Detailed Description Text (123):

Radioiodination is accomplished by the chloramine-T method, as described by Hunter and Greenwood (Hunter et al., Nature 194:495-496, 1962) to label antimyosin Fab with .sup.123 I. To a 100 .mu.g aliquot of DTPA-coupled antimyosin Fab antibody in 0.1M phosphate buffer (pH 7.4), 37 MBq (1 mCi) of .sup.123 I is added and mixed thoroughly. A 10-.mu.l aliquot of chloramine-T (26 mg/ml in 0.5M phosphate buffer, pH 7.4) is added followed by mixing for 2 min. Iodination is terminated by the addition of 25 .mu.l of 0.1M methionine plus 0.1M cresol. The reaction mixture is then applied to a 10-ml SEPHADEX G-25 column to separate free and protein-bound radioiodine.

Detailed Description Text (127):

Several methods have been used for the delivery of DNA into cells, including poly-L-lysine conjugated lipids (Zhou et al., Biochim. Biophys. Acta. 1065:8-14, 1991), pH sensitive immunoliposomes (Gregoriadis, G., Liposome Technology, Vol I, II, III, CRC, 1993), and cationic liposomes (Felgner et al., Proc. Natl. Acad. Sci., USA, 84:7413-7417, 1987). However, the drawback with all of these methods is the insufficient uptake and expression of selected genes (DNA). Gene delivery and transfection can be enhanced by the use of hypoxic injury and immunoliposomes as targeting modality. Transmission electron micrographs showed that immunoliposomes can be used to deliver hundreds or more units of intraliposomal contents into an individual target cell (FIG. 8).

Current US Original Classification (1):

424/450

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L4: Entry 31 of 42

File: USPT

Nov 17, 1998

US-PAT-NO: 5837283

DOCUMENT-IDENTIFIER: US 5837283 A

TITLE: Cationic lipid compositions targeting angiogenic endothelial cells

DATE-ISSUED: November 17, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McDonald; Donald M.	San Francisco	CA		
McLean; John	Redwood City	CA		
Thurston; O. Gavin	San Francisco	CA		
Baluk; Peter	San Francisco	CA		

US-CL-CURRENT: [424/450](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 32. Document ID: US 5827703 A

L4: Entry 32 of 42

File: USPT

Oct 27, 1998

US-PAT-NO: 5827703

DOCUMENT-IDENTIFIER: US 5827703 A

TITLE: Methods and composition for in vivo gene therapy

DATE-ISSUED: October 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Debs; Robert James	Mill Valley	CA		
Zhu; Ning	El Cerrito	CA		

US-CL-CURRENT: [514/44](#); [424/417](#), [424/420](#), [424/450](#), [435/325](#), [435/354](#), [435/375](#), [435/458](#), [435/6](#), [435/69.1](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 33. Document ID: US 5820879 A

L4: Entry 33 of 42

File: USPT

Oct 13, 1998

US-PAT-NO: 5820879

DOCUMENT-IDENTIFIER: US 5820879 A

TITLE: Method of delivering a lipid-coated condensed-phase microparticle composition

DATE-ISSUED: October 13, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fernandez; Julio M.	Rochester	MN		
Knudson; Mark B.	Shoreview	MN		

US-CL-CURRENT: 424/450; 424/1.21, 424/489, 424/490, 424/9.4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	K/M/C
Draw Desc	Image									

☐ 34. Document ID: US 5814315 A

L4: Entry 34 of 42

File: USPT

Sep 29, 1998

US-PAT-NO: 5814315

DOCUMENT-IDENTIFIER: US 5814315 A

TITLE: Methods for the suppression of neu mediated phenotype in tumors

DATE-ISSUED: September 29, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hung; Mien-Chie	Houston	TX		
Yu; Di-Hua	Houston	TX		
Matin; Angabin	Houston	TX		
Zhang; Yujiao Joe	Houston	TX		

US-CL-CURRENT: 424/93.2; 424/450, 424/93.6, 514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	K/M/C
Draw Desc	Image									

☐ 35. Document ID: US 5780052 A

L4: Entry 35 of 42

File: USPT

Jul 14, 1998

US-PAT-NO: 5780052

DOCUMENT-IDENTIFIER: US 5780052 A

TITLE: Compositions and methods useful for inhibiting cell death and for delivering an agent into a cell

DATE-ISSUED: July 14, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Khaw; Ban An	Milton	MA		
Torchilin; Vladimir P.	Charlestown	MA		
Narula; Jagat	Brookline	MA		
Vural; Imran	Brookline	MA		

US-CL-CURRENT: 424/450; 436/829

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMOC
Draw Desc	Image									

☐ 36. Document ID: US 5753261 A

L4: Entry 36 of 42

File: USPT

May 19, 1998

US-PAT-NO: 5753261

DOCUMENT-IDENTIFIER: US 5753261 A

TITLE: Lipid-coated condensed-phase microparticle composition

DATE-ISSUED: May 19, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fernandez; Julio M.	Rochester	MN		
Knudson; Mark B.	Shoreview	MN		

US-CL-CURRENT: 424/450; 424/489, 424/490

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMOC
Draw Desc	Image									

☐ 37. Document ID: US 5660855 A

L4: Entry 37 of 42

File: USPT

Aug 26, 1997

US-PAT-NO: 5660855

DOCUMENT-IDENTIFIER: US 5660855 A

TITLE: Lipid constructs for targeting to vascular smooth muscle tissue

DATE-ISSUED: August 26, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Male-Brune; Roxanne	Hillsborough	NC		

US-CL-CURRENT: 424/450; 514/24, 514/9

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K/MC

☐ 38. Document ID: US 5552155 A

L4: Entry 38 of 42

File: USPT

Sep 3, 1996

US-PAT-NO: 5552155

DOCUMENT-IDENTIFIER: US 5552155 A

TITLE: Fusogenic liposomes and methods for making and using same

DATE-ISSUED: September 3, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bailey; Austin L.	Vancouver			CA
Cullis; Pieter R.	Vancouver			CA

US-CL-CURRENT: 424/450; 428/402.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K/MC

☐ 39. Document ID: US 5169637 A

L4: Entry 39 of 42

File: USPT

Dec 8, 1992

US-PAT-NO: 5169637

DOCUMENT-IDENTIFIER: US 5169637 A

TITLE: Stable plurilamellar vesicles

DATE-ISSUED: December 8, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lenk; Robert P.	Lambertville	NJ		
Fountain; Michael W.	Griggstown	NJ		
Janoff; Andrew S.	Yardley	PA		
Popescu; Mircea C.	Plainsboro	NJ		
Weiss; Steven J.	Hightstown	NJ		
Ginsberg; Richard S.	Monroe Township, Salem County	NJ		
Ostro; Marc J.	Griggstown	NJ		
Gruner; Sol M.	Lawrenceville	NJ		

US-CL-CURRENT: 424/450; 514/152, 514/192, 514/2, 514/29, 514/39, 514/41

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K/MC

☐ 40. Document ID: US 5030453 A

L4: Entry 40 of 42

File: USPT

Jul 9, 1991

US-PAT-NO: 5030453

DOCUMENT-IDENTIFIER: US 5030453 A

TITLE: Stable plurilamellar vesicles

DATE-ISSUED: July 9, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lenk; Robert P.	Lambertville	NJ		
Fountain; Michael W.	Griggstown	NJ		
Janoff; Andrew S.	Yardley	PA		
Popescu; Mircea C.	Plainsboro	NJ		
Weiss; Steven J.	Hightstown	NJ		
Ginsberg; Richard S.	Monroe Township,	NJ		
Ostro; Marc J.	Griggstown	NJ		
Gruner; Sol M.	Lawrenceville	NJ		

US-CL-CURRENT: 424/450

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KM/C
Draw Desc	Image									

☐ 41. Document ID: US 4708861 A

L4: Entry 41 of 42

File: USPT

Nov 24, 1987

US-PAT-NO: 4708861

DOCUMENT-IDENTIFIER: US 4708861 A

TITLE: Liposome-gel compositions

DATE-ISSUED: November 24, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Popescu; Mircea C.	Plainsboro	NJ		
Weiner; Alan L.	Plainsboro	NJ		
Carpenter-Green; Sharon S.	East Windsor	NJ		

US-CL-CURRENT: 424/1.21, 264/4.1, 264/4.32, 424/1.25, 424/450, 424/457, 424/458,
424/460, 424/462, 424/484, 428/402.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KM/C
Draw Desc	Image									

☐ 42. Document ID: US 4684625 A

L4: Entry 42 of 42

File: USPT

Aug 4, 1987

US-PAT-NO: 4684625

DOCUMENT-IDENTIFIER: US 4684625 A

TITLE: Method for enhancing the anti-infective activity of muramyl dipeptide derivatives

DATE-ISSUED: August 4, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Eppstein; Deborah A.	Palo Alto	CA		
Fraser-Smith; Elizabeth	Los Altos	CA		
Matthews; Thomas R.	Los Gatos	CA		

US-CL-CURRENT: 514/19; 424/450, 514/8, 536/4.1, 536/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw. Desc	Image									

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L4: Entry 1 of 42

File: USPT

Oct 15, 2002

US-PAT-NO: 6465007

DOCUMENT-IDENTIFIER: US 6465007 B1

TITLE: Transgene expression in polarized cells

DATE-ISSUED: October 15, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Eastman; Simon J.	Hudson	MA		
Chu; Quiming	Melrose	MA		
Tousignant; Jennifer D.	Cambridge	MA		
Cheng; Seng H.	Wellesley	MA		
Scheule; Ronald K.	Hopkinton	MA		

US-CL-CURRENT: 424/450; 424/93.1, 424/93.2, 424/93.6, 435/320.1, 435/325, 435/455, 435/456, 514/2, 514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 2. Document ID: US 6447801 B1

L4: Entry 2 of 42

File: USPT

Sep 10, 2002

US-PAT-NO: 6447801

DOCUMENT-IDENTIFIER: US 6447801 B1

TITLE: Anti-parasitic action of N,N-diethyl-m-toluamide (deet) and formulations that prolong its activity in the skin

DATE-ISSUED: September 10, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Salafsky; Bernard	Rockford	IL	61114	
Kalyanasundaram; Ramaswamy	Rockford	IL	61107	
Shibuya; Takeshi	Tokyo			JP

US-CL-CURRENT: 424/450; 424/405, 424/406, 424/408, 424/DIG.10, 514/617, 514/875, 514/919

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 3. Document ID: US 6410049 B1

L4: Entry 3 of 42

File: USPT

Jun 25, 2002

US-PAT-NO: 6410049

DOCUMENT-IDENTIFIER: US 6410049 B1

TITLE: Preparation of stable formulations of lipid-nucleic acid complexes for efficient in vivo delivery

DATE-ISSUED: June 25, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Papahadjopoulos; Demetrios	San Francisco	CA		
Hong; Keelung	San Francisco	CA		
Zheng; Weiwen	San Francisco	CA		

US-CL-CURRENT: 424/450; 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 4. Document ID: US 6358523 B1

L4: Entry 4 of 42

File: USPT

Mar 19, 2002

US-PAT-NO: 6358523

DOCUMENT-IDENTIFIER: US 6358523 B1

TITLE: Macromolecule-lipid complexes and methods for making and regulating

DATE-ISSUED: March 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Safinya; Cyrus R.	Santa Barbara	CA		
Raedler; Joachim Oskar	Garching			DE
Koltover; Ilya	Pasadena	CA		

US-CL-CURRENT: 424/450; 424/400, 424/405, 424/484, 424/9.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 5. Document ID: US 6350853 B1

L4: Entry 5 of 42

File: USPT

Feb 26, 2002

US-PAT-NO: 6350853

DOCUMENT-IDENTIFIER: US 6350853 B1

TITLE: Conjugated peptide nucleic acids having enhanced cellular uptake

DATE-ISSUED: February 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nielsen; Peter E.	Kokkedal			DK
Knudsen; Helle	Copenhagen			DK

US-CL-CURRENT: 530/300; 424/450, 536/23.1, 536/24.3, 536/24.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 6. Document ID: US 6331524 B1

L4: Entry 6 of 42

File: USPT

Dec 18, 2001

US-PAT-NO: 6331524

DOCUMENT-IDENTIFIER: US 6331524 B1

TITLE: Organ-specific targeting of cationic amphiphile / DNA complexes for gene therapy

DATE-ISSUED: December 18, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Scheule; Ronald K.	Hopkinton	MA		
Bagley; Rebecca G.	Natick	MA		
Eastman; Simon J.	Hudson	MA		
Cheng; Seng H.	Wellesley	MA		
Marshall; John	Hopedale	MA		
Harris; David J.	Lexington	MA		
Lee; Edward R.	Natick	MA		
Siegel; Craig S.	Woburn	MA		
Chang; Chau-Dung	Lexington	MA		
Hubbard; S. Catherine	Belmont	MA		
Johnson; Duane E.	Encinitas	CA		
Maneval; Daniel C.	San Diego	CA		
Shepard; H. Michael	Rancho Santa Fe	CA		
Gregory; Richard J.	Westford	MA		

US-CL-CURRENT: 514/44; 424/450, 435/320.1, 435/455, 435/458

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 7. Document ID: US 6326356 B1

L4: Entry 7 of 42

File: USPT

Dec 4, 2001

US-PAT-NO: 6326356

DOCUMENT-IDENTIFIER: US 6326356 B1

TITLE: Suppression of neu overexpression using a mini-E1A gene

DATE-ISSUED: December 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hung; Mein-Chie	Houston	TX		
Chen; Hua	Houston	TX		
Yu; Dihua	Houston	TX		

US-CL-CURRENT: 514/44; 424/450, 424/93.2, 424/93.6

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 8. Document ID: US 6320017 B1

L4: Entry 8 of 42

File: USPT

Nov 20, 2001

US-PAT-NO: 6320017

DOCUMENT-IDENTIFIER: US 6320017 B1

TITLE: Polyamide oligomers

DATE-ISSUED: November 20, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ansell; Steven Michial	Vancouver			CA

US-CL-CURRENT: 528/310; 424/450, 528/170, 528/322, 528/328, 528/332, 528/335,
528/336, 528/342, 554/35, 554/36, 554/37, 554/79

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 9. Document ID: US 6287591 B1

L4: Entry 9 of 42

File: USPT

Sep 11, 2001

US-PAT-NO: 6287591

DOCUMENT-IDENTIFIER: US 6287591 B1

TITLE: Charged therapeutic agents encapsulated in lipid particles containing four lipid components

DATE-ISSUED: September 11, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Semple; Sean C.	Vancouver			CA
Klimuk; Sandra K.	N. Vancouver			CA
Harasym; Troy	Vancouver			CA
Hope; Michael J.	Vancouver			CA
Ansell; Steven M.	Vancouver			CA
Cullis; Pieter	Vancouver			CA
Scherrer; Peter	Vancouver			CA
Debeyer; Dan	Vancouver			CA

US-CL-CURRENT: [424/450](#); [428/402.2](#), [435/177](#), [435/458](#), [514/44](#), [536/22.1](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 10. Document ID: US 6245520 B1

L4: Entry 10 of 42

File: USPT

Jun 12, 2001

US-PAT-NO: 6245520

DOCUMENT-IDENTIFIER: US 6245520 B1

TITLE: Methods for introducing nucleic acids into mammalian cells using imidazolium lipids

DATE-ISSUED: June 12, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wang; Jinkang	San Francisco	CA		
Niven; Ralph	Redwood City	CA		
Zhang; Yilin	San Mateo	CA		
Huang; Pingzhong	Apex	NC		

US-CL-CURRENT: [435/6](#); [424/450](#), [435/320.1](#), [435/375](#), [435/455](#), [435/458](#), [435/69.1](#), [435/70.1](#), [435/91.1](#), [514/400](#), [514/44](#), [548/349.1](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 11. Document ID: US 6210708 B1

L4: Entry 11 of 42

File: USPT

Apr 3, 2001

US-PAT-NO: 6210708

DOCUMENT-IDENTIFIER: US 6210708 B1

TITLE: Cationic virosomes as transfer system for genetic material

DATE-ISSUED: April 3, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Walti; Ernst Rudolf	Munchenbuchsee			CH
Gluck; Reinhard	Spiegel bei Bern			CH
Klein; Peter	Langenbruck			CH

US-CL-CURRENT: 424/450; 435/458

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWMC
Draw Desc	Image									

☐ 12. Document ID: US 6210707 B1

L4: Entry 12 of 42

File: USPT

Apr 3, 2001

US-PAT-NO: 6210707

DOCUMENT-IDENTIFIER: US 6210707 B1

TITLE: Methods of forming protein-linked lipidic microparticles, and compositions thereof

DATE-ISSUED: April 3, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Papahadjopoulos; Demetrios	San Francisco	CA		
Hong; Keelung	San Francisco	CA		
Zheng; Weiwen	San Francisco	CA		
Kirpotin; Dmitri B.	San Francisco	CA		

US-CL-CURRENT: 424/450; 435/440, 435/6, 435/7.1, 435/7.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWMC
Draw Desc	Image									

☐ 13. Document ID: US 6197754 B1

L4: Entry 13 of 42

File: USPT

Mar 6, 2001

US-PAT-NO: 6197754

DOCUMENT-IDENTIFIER: US 6197754 B1

TITLE: Suppression of tumor growth by a mini-E1A gene

DATE-ISSUED: March 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hung; Mien-Chie	Houston	TX		
Chen; Hua	Houston	TX		
Yu; Di-hua	Houston	TX		

US-CL-CURRENT: 514/44; 424/450, 424/93.2, 424/93.6

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 14. Document ID: US 6147204 A

L4: Entry 14 of 42

File: USPT

Nov 14, 2000

US-PAT-NO: 6147204

DOCUMENT-IDENTIFIER: US 6147204 A

TITLE: Nucleic acid ligand complexes

DATE-ISSUED: November 14, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gold; Larry	Boulder	CO		
Schmidt; Paul G	Niwot	CO		
Janjic; Nebojsa	Boulder	CO		

US-CL-CURRENT: 536/24.5; 424/450, 435/6, 435/91.2, 436/6, 536/25.4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 15. Document ID: US 6121457 A

L4: Entry 15 of 42

File: USPT

Sep 19, 2000

US-PAT-NO: 6121457

DOCUMENT-IDENTIFIER: US 6121457 A

TITLE: Compositions and methods using novel substituted imidazolium lipids

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wang; Jinkang	San Francisco	CA		
Niven; Ralph	Redwood City	CA		
Zhang; Yilin	San Mateo	CA		
Huang; Pingzhong	Apex	NC		

US-CL-CURRENT: 548/350.1; 424/450, 435/320.1, 435/375, 435/455, 435/6, 435/69.1, 435/70.1, 435/91.1, 548/349.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 16. Document ID: US 6120799 A

L4: Entry 16 of 42

File: USPT

Sep 19, 2000

US-PAT-NO: 6120799

DOCUMENT-IDENTIFIER: US 6120799 A

TITLE: Cationic lipid compositions targeting angiogenic endothelial cells

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McDonald; Donald M.	San Francisco	CA		
McLean; John	Redwood City	CA		
Thurston; O. Gavin	San Francisco	CA		
Baluk; Peter	San Francisco	CA		

US-CL-CURRENT: 424/450

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMNC
Draw Desc	Image									

☐ 17. Document ID: US 6110745 A

L4: Entry 17 of 42

File: USPT

Aug 29, 2000

US-PAT-NO: 6110745

DOCUMENT-IDENTIFIER: US 6110745 A

TITLE: Preparation of lipid-nucleic acid particles using a solvent extraction and direct hydration method

DATE-ISSUED: August 29, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Zhang; Yuan-Peng	Mountain View	CA		
Scherrer; Peter	Vancouver			CA
Hope; Michael J.	Vancouver			CA

US-CL-CURRENT: 435/458; 264/4.1, 424/450, 424/93.2, 435/320.1, 435/325, 435/91.1, 435/91.31, 514/44, 536/23.1, 536/24.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMNC
Draw Desc	Image									

☐ 18. Document ID: US 6086913 A

L4: Entry 18 of 42

File: USPT

Jul 11, 2000

US-PAT-NO: 6086913

DOCUMENT-IDENTIFIER: US 6086913 A

TITLE: Liposomal delivery of AAV vectors

DATE-ISSUED: July 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tam; Patrick	Vancouver			CA
Chonn; Arcadio	Vancouver			CA

US-CL-CURRENT: 424/450; 435/235.1, 435/320.1, 435/458, 435/69.1, 536/23.2, 536/23.7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 19. Document ID: US 6071533 A

L4: Entry 19 of 42

File: USPT

Jun 6, 2000

US-PAT-NO: 6071533

DOCUMENT-IDENTIFIER: US 6071533 A

TITLE: Preparation of stable formulations of lipid-nucleic acid complexes for efficient in vivo delivery

DATE-ISSUED: June 6, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Papahadjopoulos; Demetrios	San Francisco	CA		
Hong; Keelung	San Francisco	CA		
Zheng; Weiwen	San Francisco	CA		

US-CL-CURRENT: 424/450

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 20. Document ID: US 6043094 A

L4: Entry 20 of 42

File: USPT

Mar 28, 2000

US-PAT-NO: 6043094

DOCUMENT-IDENTIFIER: US 6043094 A

TITLE: Therapeutic liposome composition and method

DATE-ISSUED: March 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Francis J.	San Francisco	CA		
Zalipsky; Samuel	Redwood City	CA		
Huang; Shi Kun	Castro Valley	CA		

US-CL-CURRENT: 435/458; 424/450, 435/375, 530/402, 530/403

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 21. Document ID: US 6011020 A

L4: Entry 21 of 42

File: USPT

Jan 4, 2000

US-PAT-NO: 6011020

DOCUMENT-IDENTIFIER: US 6011020 A

TITLE: Nucleic acid ligand complexes

DATE-ISSUED: January 4, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gold; Larry	Boulder	CO		
Schmidt; Paul G.	San Marino	CA		
Janjic; Nebojsa	Boulder	CO		

US-CL-CURRENT: 514/44; 424/1.21, 424/1.73, 424/450, 435/6, 536/22.1, 536/23.1, 536/24.3, 536/24.31

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 22. Document ID: US 6001644 A

L4: Entry 22 of 42

File: USPT

Dec 14, 1999

US-PAT-NO: 6001644

DOCUMENT-IDENTIFIER: US 6001644 A

TITLE: Mammalian transformation complex comprising a lipid carrier and DNA encoding CFTR

DATE-ISSUED: December 14, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Debs; Robert J.	Mill Valley	CA		
Zhu; Ning	El Cerrito	CA		

US-CL-CURRENT: 435/320.1; 128/203.22, 424/450, 435/458, 514/44, 600/243, 600/249, 601/1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 23. Document ID: US 5981501 A

L4: Entry 23 of 42

File: USPT

Nov 9, 1999

US-PAT-NO: 5981501

DOCUMENT-IDENTIFIER: US 5981501 A

TITLE: Methods for encapsulating plasmids in lipid bilayers

DATE-ISSUED: November 9, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wheeler; Jeffery J.	Richmond			CA
Hope; Michael	Vancouver			CA
Cullis; Pieter R.	Vancouver			CA
Bally; Marcel B.	Bowen Island			CA

US-CL-CURRENT: 514/44; 264/4.3, 264/4.6, 424/450, 436/829, 514/55, 514/851

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 24. Document ID: US 5980935 A

L4: Entry 24 of 42

File: USPT

Nov 9, 1999

US-PAT-NO: 5980935

DOCUMENT-IDENTIFIER: US 5980935 A

TITLE: Cationic lipids and methods of use therefor

DATE-ISSUED: November 9, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kirpotin; Dmitri	San Fransisco	CA	94121	
Chan; Daniel C. F.	Denver	CO	80237	
Bunn; Paul	Evergreen	CO	80439	

US-CL-CURRENT: 424/450

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 25. Document ID: US 5976567 A

L4: Entry 25 of 42

File: USPT

Nov 2, 1999

US-PAT-NO: 5976567

DOCUMENT-IDENTIFIER: US 5976567 A

TITLE: Lipid-nucleic acid particles prepared via a hydrophobic lipid-nucleic acid complex intermediate and use for gene transfer

DATE-ISSUED: November 2, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wheeler; Jeffery J.	Richmond			CA
Bally; Marcel B.	Bowen Island			CA
Zhang; Yuan-Peng	Vancouver			CA
Reimer; Dorothy L.	Vancouver			CA
Hope; Michael	Vancouver			CA
Cullis; Pieter R.	Vancouver			CA
Scherrer; Peter	Vancouver			CA

US-CL-CURRENT: 424/450; 435/458, 514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 26. Document ID: US 5965542 A

L4: Entry 26 of 42

File: USPT

Oct 12, 1999

US-PAT-NO: 5965542

DOCUMENT-IDENTIFIER: US 5965542 A

TITLE: Use of temperature to control the size of cationic liposome/plasmid DNA complexes

DATE-ISSUED: October 12, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wasan; Ellen K.	Vancouver			CA
Bally; Marcel B.	Bowen Island			CA
Hope; Michael J.	Vancouver			CA
Reimer; Dorothy L.	Vancouver			CA
Ahkong; Quet Fah	Surry			CA

US-CL-CURRENT: 514/44; 424/450, 435/320.1, 435/458, 435/468, 435/91.1, 435/91.4, 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 27. Document ID: US 5955365 A

L4: Entry 27 of 42

File: USPT

Sep 21, 1999

US-PAT-NO: 5955365

DOCUMENT-IDENTIFIER: US 5955365 A

TITLE: Self-assembling polynucleotide delivery system

DATE-ISSUED: September 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Szoka, Jr.; Francis C.	San Francisco	CA		
Haensler; Jean	San Francisco	CA		

US-CL-CURRENT: 435/441; 424/450, 435/440, 435/443, 435/455, 435/458, 435/466, 514/44,
536/24.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KM/C
Draw Desc	Image									

☐ 28. Document ID: US 5939401 A

L4: Entry 28 of 42

File: USPT

Aug 17, 1999

US-PAT-NO: 5939401

DOCUMENT-IDENTIFIER: US 5939401 A

TITLE: Cationic amphiphile compositions for intracellular delivery of therapeutic molecules

DATE-ISSUED: August 17, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Marshall; John	Milford	MA		
Harris; David J.	Lexington	MA		
Lee; Edward R.	Quincy	MA		
Siegel; Craig S.	Woburn	MA		
Eastman; Simon J.	Marlboro	MA		
Chang; Chau-Dung	Lexington	MA		
Scheule; Ronald K.	Hopkinton	MA		
Cheng; Seng H.	Wellesley	MA		

US-CL-CURRENT: 514/44; 424/450, 514/2, 552/544

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KM/C
Draw Desc	Image									

☐ 29. Document ID: US 5908777 A

L4: Entry 29 of 42

File: USPT

Jun 1, 1999

US-PAT-NO: 5908777

DOCUMENT-IDENTIFIER: US 5908777 A

TITLE: Lipidic vector for nucleic acid delivery

DATE-ISSUED: June 1, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lee; Robert J.	Pittsburgh	PA		
Huang; Leaf	Wexford	PA		

US-CL-CURRENT: 435/320.1; 264/4.1, 424/450, 424/93.21, 435/325, 435/458, 435/69.1,
514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMIC
Draw Desc	Image									

☐ 30. Document ID: US 5891689 A

L4: Entry 30 of 42

File: USPT

Apr 6, 1999

US-PAT-NO: 5891689

DOCUMENT-IDENTIFIER: US 5891689 A

TITLE: Heme-bearing microparticles for targeted delivery of drugs

DATE-ISSUED: April 6, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Takle; Garry B.	New York	NY		
George; Shaji T.	New York	NY		

US-CL-CURRENT: 435/458; 424/450, 435/174, 435/456, 514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMIC
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L3 and ((424/450)!.CCLS.)	42

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L4	L3 and ((424/450)!.CCLS.)	42	L4
L3	(cationic adj1 liposome\$) and label	406	L3
L2	(cationic adj1 liposome\$) and label\$	1034	L2
L1	(cationic adj1 liposome\$) same label	5	L1

END OF SEARCH HISTORY